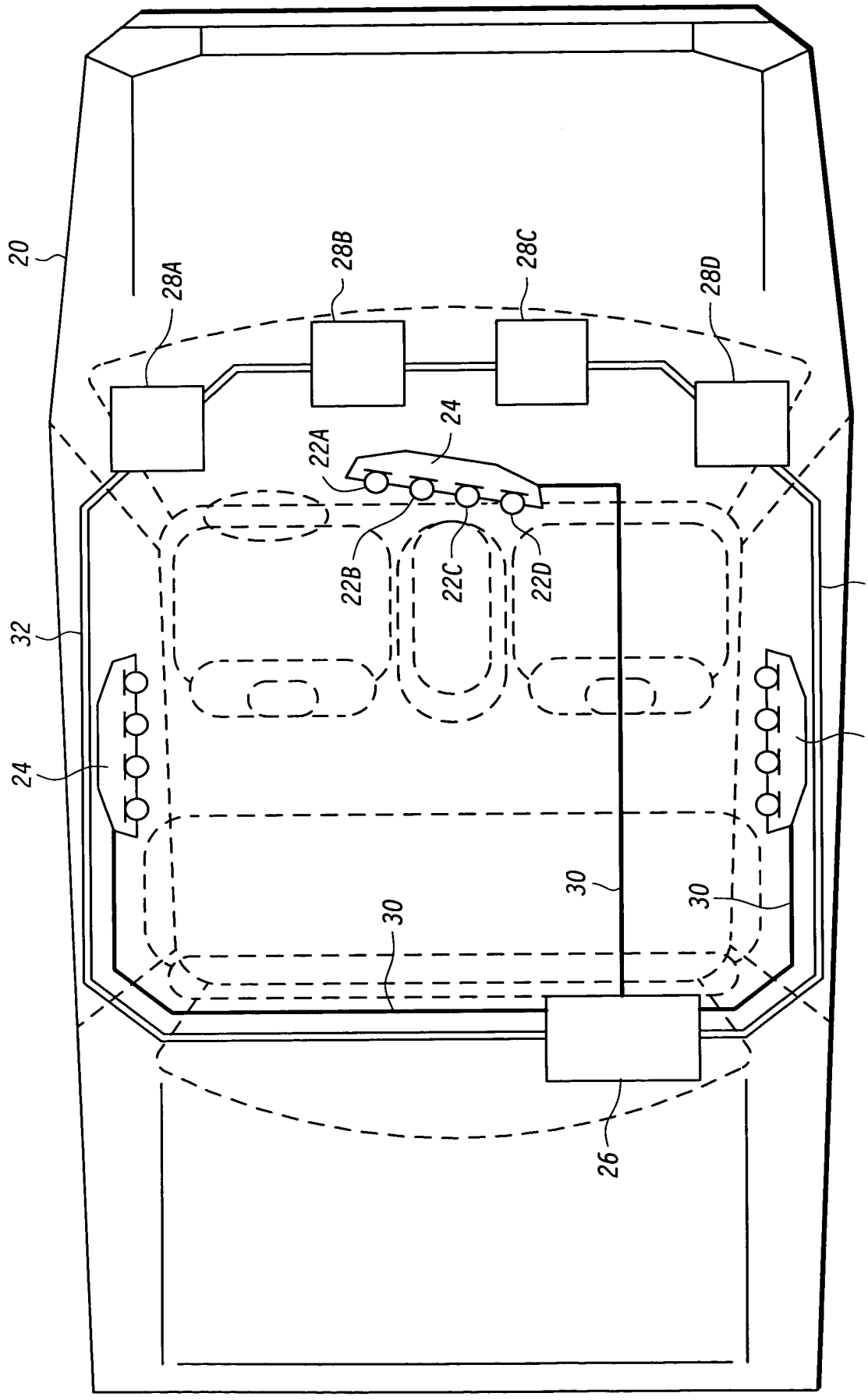


FIG.1

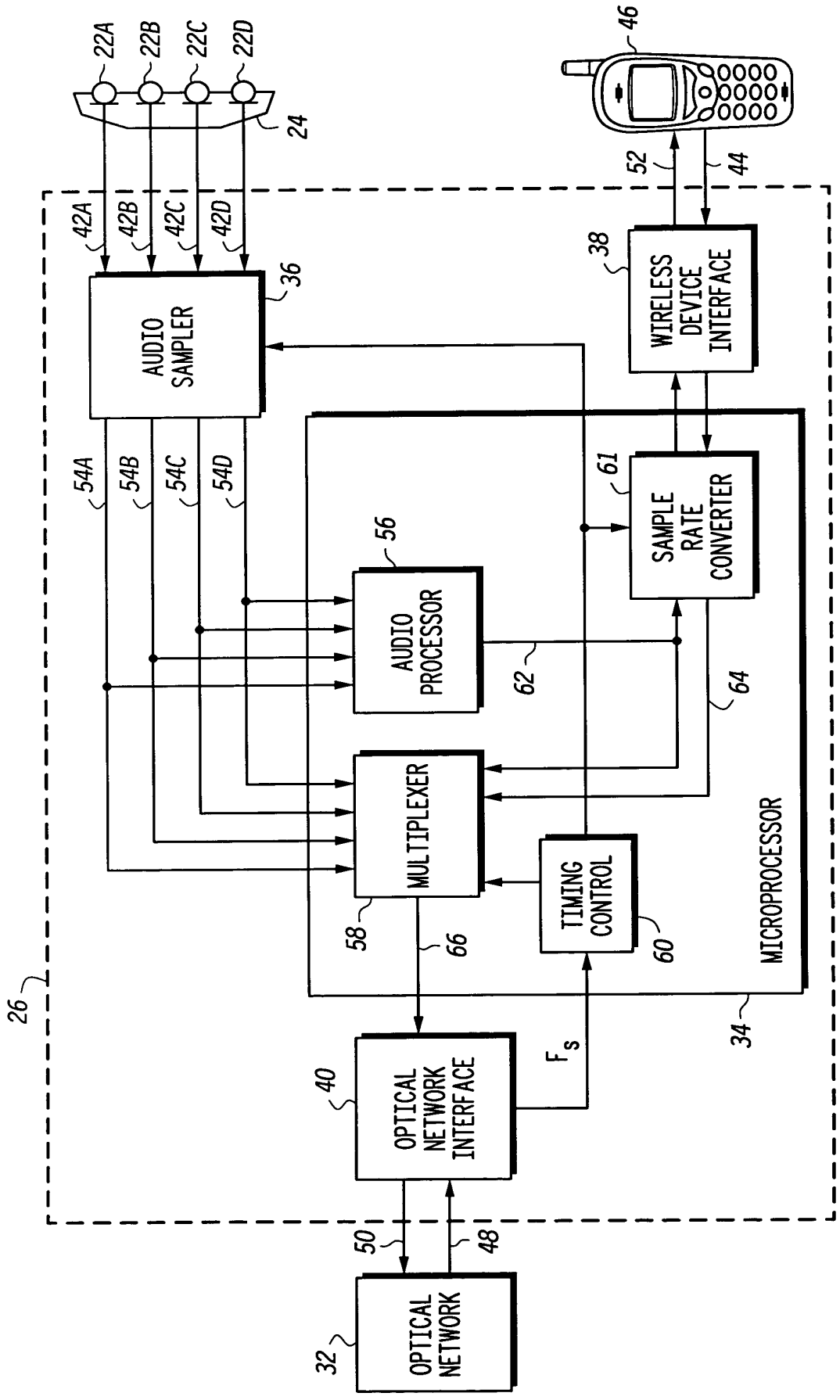
22A
22B
22C
22D
24
46
52
44
42A
42B
42C
42D
36
AUDIO SAMPLER
38
WIRELESS DEVICE INTERFACE
54A
54B
54C
54D
61
SAMPLE RATE CONVERTER
56
AUDIO PROCESSOR
62
64
MULTIPLEXER
58
66
TIMING CONTROL
60
MICROPROCESSOR
26
34
40
OPTICAL NETWORK INTERFACE
$F_s$
50
48
32
OPTICAL NETWORK

FIG.2

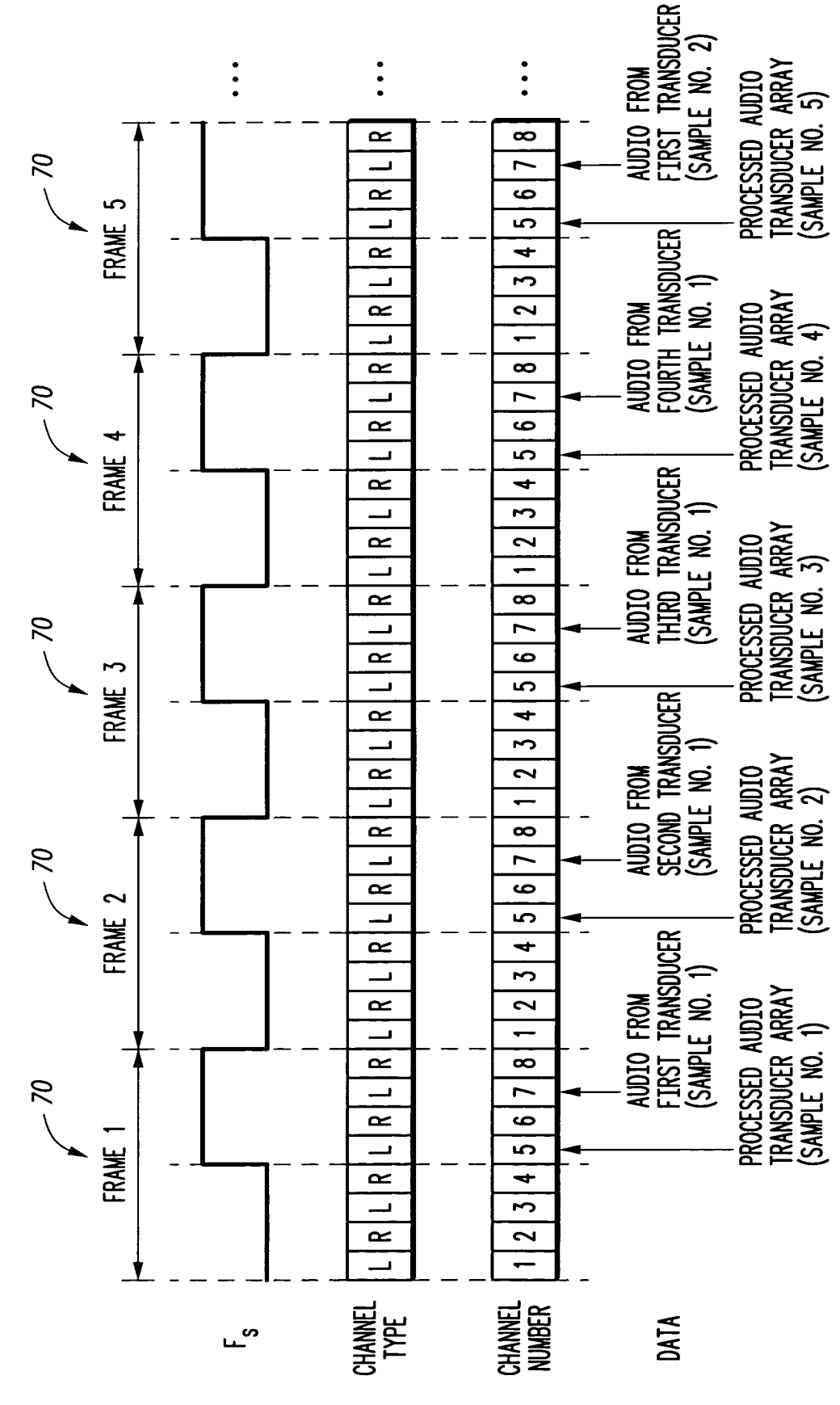
FRAME 1
FRAME 2
FRAME 3
FRAME 4
FRAME 5
70
$F_s$
CHANNEL TYPE
CHANNEL NUMBER
DATA
L R L R L R L R L R L R L R L R L R L R
1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8
AUDIO FROM FIRST TRANSDUCER (SAMPLE NO. 1)
PROCESSED AUDIO TRANSDUCER ARRAY (SAMPLE NO. 1)
AUDIO FROM SECOND TRANSDUCER (SAMPLE NO. 1)
PROCESSED AUDIO TRANSDUCER ARRAY (SAMPLE NO. 2)
AUDIO FROM THIRD TRANSDUCER (SAMPLE NO. 1)
PROCESSED AUDIO TRANSDUCER ARRAY (SAMPLE NO. 3)
AUDIO FROM FOURTH TRANSDUCER (SAMPLE NO. 1)
PROCESSED AUDIO TRANSDUCER ARRAY (SAMPLE NO. 4)
AUDIO FROM FIRST TRANSDUCER (SAMPLE NO. 2)
PROCESSED AUDIO TRANSDUCER ARRAY (SAMPLE NO. 5)

FIG.3

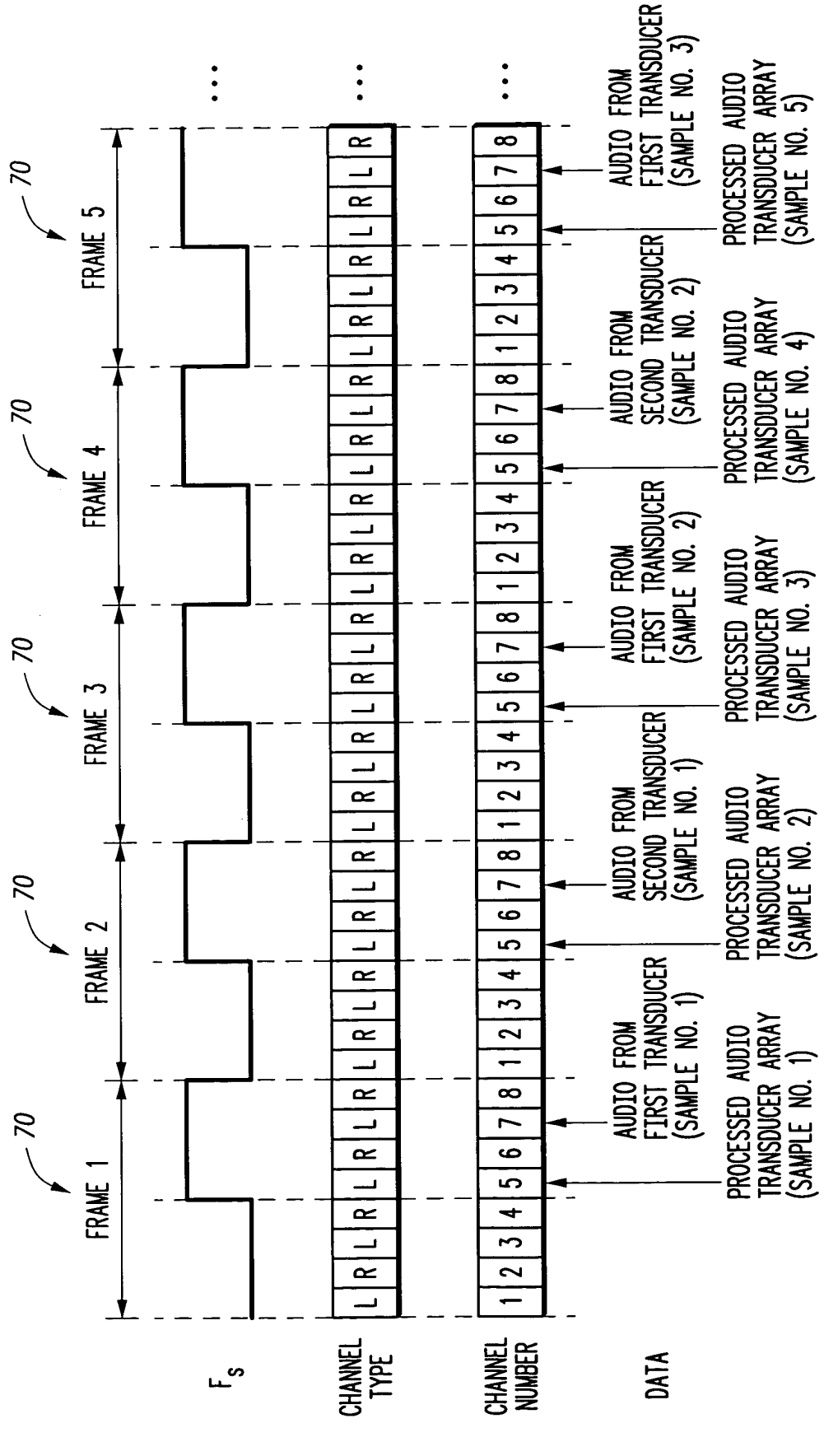
FRAME 1
FRAME 2
FRAME 3
FRAME 4
FRAME 5
70
$F_S$
CHANNEL TYPE
CHANNEL NUMBER
DATA
L R L R L R L R L R L R L R L R
1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8
AUDIO FROM FIRST TRANSDUCER (SAMPLE NO. 1)
AUDIO FROM SECOND TRANSDUCER (SAMPLE NO. 1)
AUDIO FROM FIRST TRANSDUCER (SAMPLE NO. 2)
AUDIO FROM SECOND TRANSDUCER (SAMPLE NO. 2)
AUDIO FROM FIRST TRANSDUCER (SAMPLE NO. 3)
PROCESSED AUDIO TRANSDUCER ARRAY (SAMPLE NO. 1)
PROCESSED AUDIO TRANSDUCER ARRAY (SAMPLE NO. 2)
PROCESSED AUDIO TRANSDUCER ARRAY (SAMPLE NO. 3)
PROCESSED AUDIO TRANSDUCER ARRAY (SAMPLE NO. 4)
PROCESSED AUDIO TRANSDUCER ARRAY (SAMPLE NO. 5)

*FIG. 4*

72

| FIFO BUFFER | | |
|---|---|---|
| CHANNEL | DATA TYPE | DATA DESCRIPTION |
| 1 | CONTROL | 16-BIT SAMPLE NO. 1 AT $F_S$ RATE |
| 3 | VEHICLE SPEAKER REFERENCE | 16-BIT SAMPLE NO. 1 AT $F_S$ RATE |
| 5 | PROCESSED AUDIO FROM TRANSDUCER ARRAY | 16-BIT SAMPLE NO. 1 AT $F_S$ RATE |
| 7 | AUDIO FROM TRANSDUCER NO. 1 | 16-BIT SAMPLE NO. 1 AT $F_S/4$ RATE |
| 1 | CONTROL | 16-BIT SAMPLE NO. 2 AT $F_S$ RATE |
| 3 | VEHICLE SPEAKER REFERENCE | 16-BIT SAMPLE NO. 2 AT $F_S$ RATE |
| 5 | PROCESSED AUDIO FROM TRANSDUCER ARRAY | 16-BIT SAMPLE NO. 2 AT $F_S$ RATE |
| 7 | AUDIO FROM TRANSDUCER NO. 2 | 16-BIT SAMPLE NO. 1 AT $F_S/4$ RATE |
| 1 | CONTROL | 16-BIT SAMPLE NO. 3 AT $F_S$ RATE |
| 3 | VEHICLE SPEAKER REFERENCE | 16-BIT SAMPLE NO. 3 AT $F_S$ RATE |
| 5 | PROCESSED AUDIO FROM TRANSDUCER ARRAY | 16-BIT SAMPLE NO. 3 AT $F_S$ RATE |
| 7 | AUDIO FROM TRANSDUCER NO. 3 | 16-BIT SAMPLE NO. 1 AT $F_S/4$ RATE |
| 1 | CONTROL | 16-BIT SAMPLE NO. 4 AT $F_S$ RATE |
| 3 | VEHICLE SPEAKER REFERENCE | 16-BIT SAMPLE NO. 4 AT $F_S$ RATE |
| 5 | PROCESSED AUDIO FROM TRANSDUCER ARRAY | 16-BIT SAMPLE NO. 4 AT $F_S$ RATE |
| 7 | AUDIO FROM TRANSDUCER NO. 4 | 16-BIT SAMPLE NO. 1 AT $F_S/4$ RATE |
| 1 | CONTROL | 16-BIT SAMPLE NO. 5 AT $F_S$ RATE |
| 3 | VEHICLE SPEAKER REFERENCE | 16-BIT SAMPLE NO. 5 AT $F_S$ RATE |
| 5 | PROCESSED AUDIO FROM TRANSDUCER ARRAY | 16-BIT SAMPLE NO. 5 AT $F_S$ RATE |
| 7 | AUDIO FROM TRANSDUCER NO. 1 | 16-BIT SAMPLE NO. 2 AT $F_S/4$ RATE |

FIG. 5

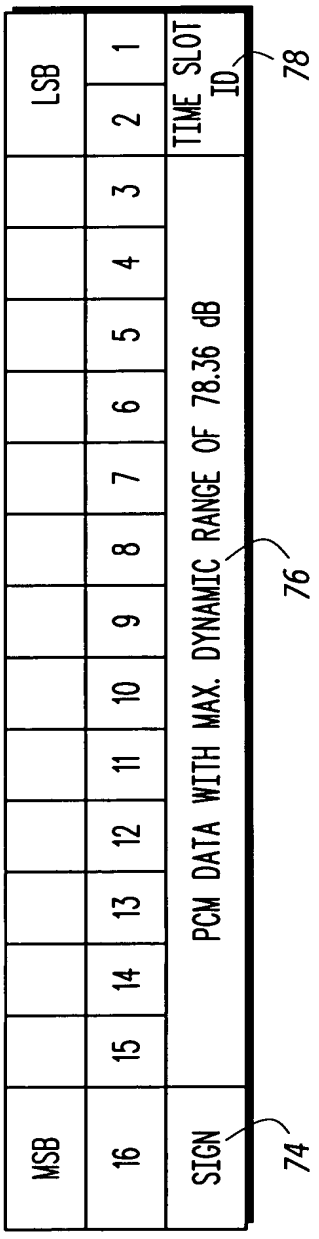
MSB
LSB
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
SIGN
PCM DATA WITH MAX. DYNAMIC RANGE OF 78.36 dB
TIME SLOT ID
74
76
78

FIG.6

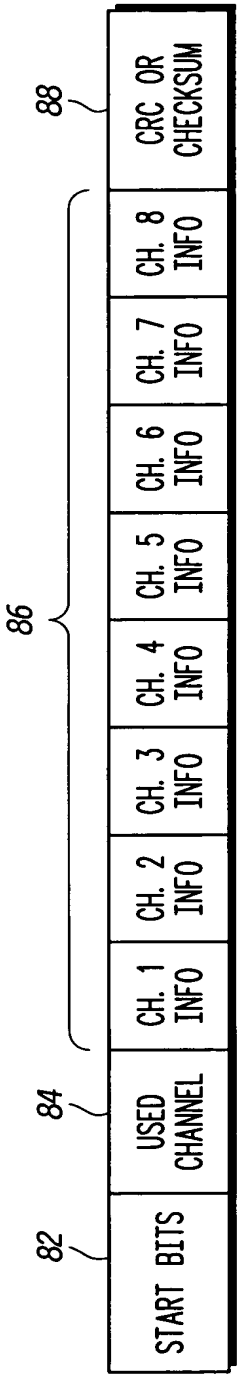
START BITS
USED CHANNEL
CH. 1 INFO
CH. 2 INFO
CH. 3 INFO
CH. 4 INFO
CH. 5 INFO
CH. 6 INFO
CH. 7 INFO
CH. 8 INFO
CRC OR CHECKSUM
82
84
86
88

FIG.7